

CLAIMS

We claim:

1. An elongated rotary member for denesting articles having spaced apart peripheral outwardly extending rims when nested, said member comprising:

at least one profile, said profile sized and shaped to support a stack of the nested articles by engaging the rim of the lowermost article in the stack as said rotary member rotates about its longitudinal axis and

5 at least one groove formed in the profile, said groove sized and shaped to receive a rim of the lowermost article in the stack of nested articles in response to rotation of said member and denest the lowermost article from the stack.

2. The elongated rotary member of claim 1, wherein said at least one groove comprises a first face for receiving the rim of the lowermost article and a second pipe for engaging the rim and denesting the article from the stack of nested articles.

3. An apparatus for denesting articles having spaced apart peripheral outwardly extending rims when nested, said apparatus comprising:

5 a pair of elongated laterally spaced rotary members, each of said rotary members including at least one profile sized and shaped to support the stack of the nested articles between said members by engaging the rim of the lowermost article in the stack as said rotary member rotates about its longitudinal axis, and

at least one groove formed in the profile and sized and shaped to receive and engage a rim of the lowermost article in the stack of nested articles and denest the lowermost article from the stack.

4. The apparatus as set forth in claim 3 including a drive for counterrotating said rotary members and maintaining the grooves in synchronization at the point of denesting.

5. An apparatus for denesting cup-shaped articles having peripheral outwardly extending rims, said rims spaced apart when said articles are in a nested stack, said apparatus comprising:

a pair of laterally spaced counterrotatable shafts each having a profiled surface

5 portion sized and shaped to receive the stack therebetween, to at least partially surround

the lowermost article in the stack and to support the stack by engaging the rim of said lowermost article; and

10 a groove formed in each profiled surface portion, said grooves sized and shaped to receive and engage the rim of the lowermost article in response to counterrotation of said shafts and to denest and separate said lowermost article from the stack.

6. The apparatus as set forth in claim 5 including a drive for counterrotating said shafts and maintaining the grooves in synchronization at the position of denesting and separation.

7. The apparatus as set forth in claim 6 wherein each shaft includes a plurality of grooves circumferentially spaced around said profiled surface, and said drive is operative to provide unidirectional rotation of said shafts.

8. The apparatus as set forth in claim 6 wherein said drive is operative to provide reciprocal rotation of said shafts.

9. The apparatus as set forth in claim 5 wherein each of said grooves has a generally V-shaped cross-section defined by a leading face and a trailing face, said leading face adapted to receive the rim of said lowermost article and said trailing face adapted to engage said rim for separation.

10. The apparatus as set forth in claim 9 wherein said leading and trailing faces intersect along a curved separating line, and a plane containing said separating line lies parallel to and offset from the axis of rotation of the shaft.

11. The apparatus as set forth in claim 5 wherein said profiled surface portions make supporting line contract with the rim in a horizontal plane above a plane through the axes of the shafts.

12. A method for denesting cup-shaped articles having peripheral outwardly extending rims which rims are spaced apart when the articles are in a nested stack, said method comprising the steps of:

5 (1) supporting the stack between a pair of laterally spaced counterrotatable shafts having opposed profiled surface portions shaped to engage the rim of the lowermost article and to support the stack of articles;

(2) providing the shafts with opposed grooves adjacent said profiled surface portions; and,

10 (3) counterrotating the shaft to cause the rim of the lowermost cup to enter and to be engaged by a face of said groove and to separate said cup from the stack.

13. The method as set forth in claim 12 including the steps of positioning said shafts and sizing said profiled surface portions to provide line contact with the rim of the lowermost article in a plane above and parallel to a plane containing the axes of said shafts.

14. The method as set forth in claim 13 including the step of counterrotating the shafts after separating said lowermost cup to cause profiled surface portions adjacent the grooves to engage the rim of the next cup in the stack.

15. The method as set forth in claim 14 including the steps of counterrotating the shafts in the direction of separation, and providing profiled surface portions rotationally upstream of said grooves to engage the rim of said next cup.

16. The method as set forth in claim 14 including the steps of counterrotating the shafts in the direction opposite the direction of separation.

17. An apparatus for denesting cup-shaped articles having peripheral outwardly extending rims, said rims spaced apart when said articles are in a nested stack, said apparatus comprising:

5 a first rotatable shaft having a profiled surface portion sized and shaped to receive and partially surround the lowermost article in the stack and to support the stack by engaging the rim of said lowermost article; and

a groove formed in said profiled surface portion, said groove sized and shaped to receive and engage the rim of the lowermost article in response to rotation of said first shaft and to denest and separate said lowermost article from the stack.

18. The apparatus as set forth in claim 17 including a second rotatable shaft laterally spaced from said first shaft and having a second profiled surface portion sized and shaped to receive and partially surround the lowermost article in the stack and to cooperate with said first shaft to support the stack by engaging the rim of said lowermost article.

19. The apparatus as set forth in claim 18 including a second groove formed in said second surface portion sized and shaped to receive and engage the rim of said lowermost article and to cooperate with said first groove to engage the rim of said lowermost article in response to rotation of said second shaft to denest and separate said lowermost article from the stack.